Introduction	
Title	Creating Basic Shapes in Tinkercad
URL	
Summary	Students will be introduced to modeling objects in 3d CAD software (Tinkercad)

Objectives	Objectives	1. Students will understand that the manufactured objects around them originated as 3D models on a computer. 2. They will learn how to manipulate a CAD interface - changing perspective and moving and sizing primitive shapes (Cubes). 3. Students will practice converting cm to mm as they manipulate their objects. 4. Students will learn how to combine primitives to form more complex shapes. 5. Students will share their knowledge and creations with each other.
	ISTE technology Standards for students (2016)	● 6 b. create original works or responsibly repurpose or remix digital resources into new creations. ● 6 c. communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations. ● 6 d. publish or present content that customizes the message and medium for their intended audiences.
	Content Standards	T.3-5.DL.1 Use age-appropriate software to generate new ideas and create products. (Creativity and Innovation-1) T.3-5.DL.3 Play with technology and document discoveries and reflections. (Creativity and Innovation-1) T.3-5.DF.3 Demonstrate understanding of common technological vocabulary and use a variety of hardware and software. (Technology Operations and Concepts-6) T.3-5.DF.4 Use troubleshooting and adaptive skills to solve technology problems. (Technology Operations and Concepts-6) T.3-5.DF.2 Use teacher-selected Internet resources, programs, and applications to support personal and academic development. (Research and Information Fluency-3; Technology Operations and Concepts-6)

		S.K-2.ET.2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object functions to solve a given problem. (K‑2‑ETS1‑2) 3.m.4 Understand concepts of area and its measurement by counting unit squares (cm2, m2, in2, ft2); apply multiplication and addition to area (3.MD.5,6,7) 3.m.5 Solve real-world and mathematical problems recognizing area and perimeter of plane figures; distinguish between linear and area measurements (3.MD.8) 5.m.1 Convert like units within a given measurement system (e.g., cm to m, m to cm) (5.MD.1)
Standards		
Subject(s)		Technology Class
Grade Level(s)		5th & 6th

Step 1: ENGAGE		
Choose one option and fill in (leave other two boxes blank)	Common Sense Education tech tool	
	Off-site tech tool	Thingiverse.com
	Non-tech activity	Examine 3d printed objects
Teacher instructions		The instructor will present examples from Thingiverse.com - selecting several objects to showcase. [eg. work of VANDRAGON_DE or Fish Fosslz] Allow the students to briefly explore the collections of objects. Demonstrating how to view the objects as final prints and as 3D models
Student instructions (optional)		

Step 2: EXPLORE		
Choose one option and fill in (leave	Common Sense Education tech tool	

other two boxes blank)	Off-site tech tool	Tinkercad.com, padlet
	Non-tech activity	
Teacher instructions		Demonstrate how to log into Tinkercad.com. Give an overview of the interface. Demonstrate how to shift perspective and zoom in and out. Demonstrate how to drag primitives [A cube specifically] out of the toolbox and how to move it in each axis. Demonstrate how to resize the cube in each axis. Demonstrate how to rotate the cube on each axis.
Student instructions (optional)		Students are to attempt to create a rectangular object that is 5.5cm x 2cm x 3.55cm that is 2cm off of the floor. Snap a picture of your object on the assignment padlet

Step 3: EXPLAIN		
Choose one option and fill in (leave other two boxes blank)	Common Sense Education tech tool	Padlet.com
	Off-site tech tool	
	Non-tech activity	
Teacher instructions		Instruct the students to pair up and help each other shoot a short video explanation on Padlet of how to manipulate the cube's size and location in 3D space. They should take turns with one person being the camera operator and the other one doing the explanation and demonstration on the computer.
Student instructions (optional)		Use the portable PS3 webcams in the computer lab to shoot what is happening on the screen. Be sure to tell us which mouse button you are using to do what you are doing.

Step 4: ELABORATE		
Choose one option and fill in (leave other two boxes blank)	Common Sense Education tech tool	
	Off-site tech tool	Tinkercad.com, padlet.com

	Non-tech activity	
Teacher instructions		Have students make multiple cubes or other primitives and group them together to make more complex shapes. Demonstrate the "Hole" function which allows shapes to be subtracted from others. See what students can come up with. When they are finished or time is up have students snap a picture of their creation on the assignment padlet
Student instructions (optional)		Have fun combining shapes into something interesting.

Step 5: EVALUATE		
Choose one option and fill in (leave other two boxes blank)	Common Sense Education tech tool	
	Off-site tech tool	padlet.com
	Non-tech activity	
Teacher instructions		Actively observe the student's process to see if they are understanding. Review the student explanation videos on padlet. Look over the student creations on the assignment padlet
Student instructions (optional)		